

CLAIM AMENDMENTS

1. (Currently Amended) A method of fabricating an X-ray mask comprising steps of:
forming an X-ray transmitter; and
forming a laminated X-ray absorber ~~above~~ opposite said X-ray transmitter, wherein
said laminated X-ray absorber includes at least two types of layers having different
~~compositions are employed for said laminated X-ray absorber.~~

2. (Currently Amended) The method of fabricating an X-ray mask according to claim 1, wherein

said laminated X-ray absorber includes a first X-ray absorber ~~formed above~~ opposite
said X-ray transmitter and a second X-ray absorber ~~formed to be~~ in contact with said first X-ray absorber,

tungsten is employed as ~~the material for~~ one of said first X-ray absorber and said second X-ray absorber, and

diamond is employed as ~~the material for~~ the other ~~one~~ of said first X-ray absorber and said second X-ray absorber.

3. (Currently Amended) The method of fabricating an X-ray mask according to claim 1, wherein said laminated X-ray absorber includes a first X-ray absorber ~~formed~~ on said X-ray transmitter and a second X-ray absorber ~~formed~~ on said first X-ray absorber, and the said method of fabricating an X-ray mask further comprising steps of comprises:

~~forming a film serving as~~ an etching stopper film, stopping etching when etching said first X-ray absorber on said X-ray transmitter, and

forming said second X-ray absorber on said ~~film serving as an~~ etching stopper film.

4. (Currently Amended) The method of fabricating an X-ray mask according to claim 1, wherein said laminated X-ray absorber includes a first X-ray absorber ~~formed above~~ opposite said X-ray transmitter and a second X-ray absorber ~~formed~~ on said first X-ray absorber, ~~said and the method of fabricating an X-ray mask further comprising steps of comprises:~~

forming an interlayer film ~~having either a function for serving as an etching stopper or a function for serving as~~ a hard mask on said first X-ray absorber, and

forming said second X-ray absorber on said interlayer film.

5. (Currently Amended) The method of fabricating an X-ray mask according to claim 1, wherein said laminated X-ray absorber has a layer containing at least one substance selected from ~~a~~ the group consisting of lithium (~~Li~~), beryllium (~~Be~~), boron (~~B~~), carbon (~~C~~),

sodium (~~Na~~), magnesium (~~Mg~~), aluminum (~~Al~~), silicon (~~Si~~), phosphorus (~~P~~), sulfur (~~S~~), potassium (~~K~~), calcium (~~Ca~~), scandium (~~Sc~~), titanium (~~Ti~~), vanadium (~~V~~), chromium (~~Cr~~), manganese (~~Mn~~), iron (~~Fe~~), cobalt (~~Co~~), nickel (~~Ni~~), copper (~~Cu~~), zinc (~~Zn~~), gallium (~~Ga~~), germanium (~~Ge~~), arsenic (~~As~~), selenium (~~Se~~), palladium (~~Pd~~), silver (~~Ag~~), cadmium (~~Cd~~), indium (~~In~~), tin (~~Sn~~), antimony (~~Sb~~), tellurium (~~Te~~), cesium (~~Cs~~), barium (~~Ba~~), mixtures of these elements, a carbide including silicon carbide ~~or~~ and tungsten carbide, a nitride ~~such as~~ including silicon nitride, aluminum nitride, ~~or~~ and chromium nitride, an oxide including silicon oxide ~~or~~ and chromium oxide, a fluoride, and an iodide.

6. (Currently Amended) The method of fabricating an X-ray mask according to claim 1, wherein said laminated X-ray absorber has a layer containing a substance selected from ~~a~~ the group consisting of carbon (~~C~~), titanium (~~Ti~~), vanadium (~~V~~), chromium (~~Cr~~), manganese (~~Mn~~), iron (~~Fe~~), nickel (~~Ni~~), copper (~~Cu~~), zinc (~~Zn~~), gallium (~~Ga~~), germanium (~~Ge~~), arsenic (~~As~~), selenium (~~Se~~), palladium (~~Pd~~), silver (~~Ag~~), cadmium (~~Cd~~), indium (~~In~~), tin (~~Sn~~), antimony (~~Sb~~), and tellurium (~~Te~~).

7. (Currently Amended) A method of fabricating an X-ray mask comprising ~~steps of:~~ forming a ~~dug removed~~ portion ~~and on an X-ray transmitter, leaving a portion other than said dug removed portion on an said X-ray transmitter; and~~ forming an X-ray absorber on said portion other than said ~~dug removed~~ portion.

8. (Currently Amended) The method of fabricating an X-ray mask according to claim 7 further comprising ~~a step of performing ion implantation~~ implanting ions into said X-ray transmitter before forming said ~~dug removed~~ portion.

9. (Currently Amended) The method of fabricating an X-ray mask according to claim 1, wherein ~~said step of forming said X-ray absorber includes steps of:~~ forming an X-ray transmitter; forming a first X-ray absorber ~~above~~ opposite said X-ray transmitter; and forming a second X-ray absorber, different in pattern size from said first X-ray absorber, on said first X-ray absorber.

10. (Currently Amended) The method of fabricating an X-ray mask according to claim 9, wherein the pattern size of said first X-ray absorber is larger than the pattern size of said second X-ray absorber.

11. (Currently Amended) A method of fabricating a semiconductor device including carrying out an exposure ~~step~~ with an X-ray mask ~~on condition that~~ having a geometric X-ray phase difference between the phase of X-rays transmitted through an X-ray transmission part of said X-ray mask and the phase of X-rays transmitted through an X-ray absorber of said X-ray ~~mask is in the~~ a range including 0.5π and ~~in~~ proximity to 0.5π , between a resist film located ~~on~~ at a position for forming an optical image with said X-rays and said X-ray mask, wherein

said X-ray mask comprises an X-ray transmitter and said X-ray absorber ~~consisting of~~ includes a laminated structure having at least two layers ~~formed~~ on said X-ray transmitter, said laminated structure includes at least two layers having different compositions, and

~~at least either a condition that~~ the phase shift quantity of ~~said the~~ X-rays transmitted through said X-ray absorber is in ~~the~~ a range of 0.3π to 0.6π or ~~a condition that~~ the transmittance of ~~said the~~ X-rays transmitted through said X-ray absorber is in ~~the~~ a range of 30 % to 60 % ~~holds~~.

12. (Currently Amended) The method of fabricating a semiconductor device according to claim 11, including carrying out ~~said the~~ exposure ~~step~~ on condition that an average exposure wavelength of the X-rays is longer than 0.3 nm and shorter than 0.7 nm.

13. (Currently Amended) The method of fabricating a semiconductor device according to claim 11, wherein ~~the~~ absolute value of ~~the~~ a difference between ~~said the~~ geometric phase difference and ~~said the~~ phase shift quantity is in ~~the~~ a range including π and ~~in~~ proximity to π .